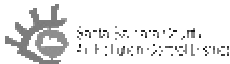


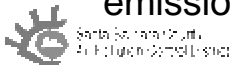
# Marine Shipping Retrofit Program

Santa Barbara County  
Air Pollution Control District  
April 2002



## Background

- 2001 Clean Air Plan
- Marine shipping – major contributor to emissions, and growing
- Board direction to pursue reductions
- Meetings with agencies, potential partners
- Most efforts focused on emissions in ports, and standards for new engines
- Our focus: Clean up existing vessel emissions





Santa Barbara County has 130 miles of coastline

## Goals

### Near-term

- Look for cost-effective emissions reduction technologies for large ship engines
- Reduce NOx emissions on one or two ships

### Long-term

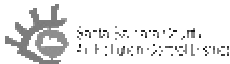
- Document emissions reduction technologies and other information gained; make available to others
- Broaden incentives to other ships passing Santa Barbara and other partner coastlines



Santa Barbara County  
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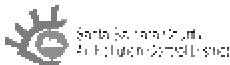
## Tasks

- Understand vessel activities and emissions
- Evaluate control technology options
- Develop partnerships and funding mechanisms
- Retrofit vessels



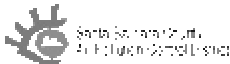
## Understand Vessel Activities and Emissions

- Economics of shipping industry – What are industry's interests?
- Identify “frequent flyers” offshore Santa Barbara County
- Research ship details
- Identify receptive ship owner-operators
- Review available emissions data; quantify emissions



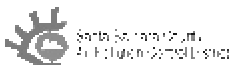
## Evaluate Control Technology Options

- Identify candidate emissions reduction technologies
- Learn what works and what doesn't
- Determine cost-effective technologies to pursue
- Work with owner-operators



## Develop Partnerships and Funding Mechanisms

- Create partnerships with potential funders
- Possible partners: USEPA, ARB, SCAQMD, Maritime Administration, environmental groups, maritime academies, engine and retrofit device manufacturers, ship owner-operators
- With partners, link ship owner-operators with funding and technologies



## Retrofit Vessels

- Develop contract structure
- Enter into contracts
- Perform baseline emissions tests
- Install retrofit devices
- Conduct post-retrofit emissions tests
- Document results and capitalize on success

